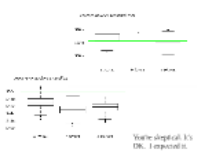
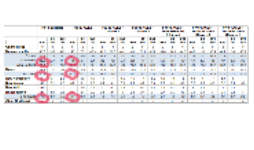
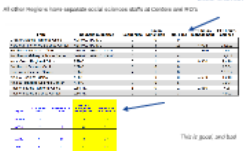
Science, service, stewardship

Provision of Social Science advice to address priority needs of fishery management stakeholders

NEFSC Economics & Human Dimensions
Science Program Review
May 1-4, 2017







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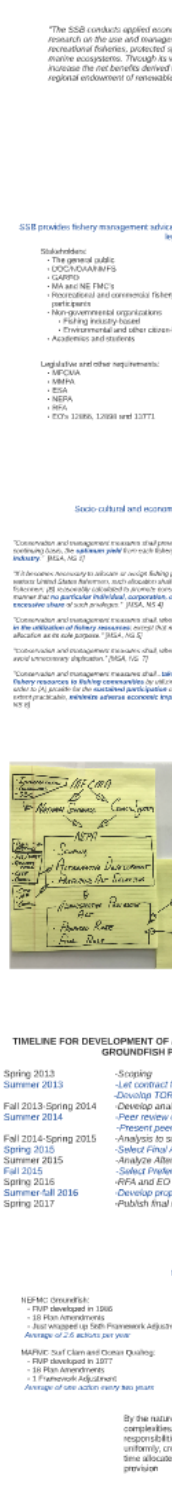


Our goal

"The SSB conducts applied economic and sociocultural research on the use and management of commercial and recreational fisheries, protected species resources, and marine ecosystems. Through its work, the Branch seeks to increase the net benefits derived by the nation from its regional endowment of renewable marine resources."

SSB provides fishery management advice to stakeholders consistent with legislative and other requirements

Stakeholders:

- The general public
- DOC/NOAA/NMFS
- GARFO
- MA and NE FMC's
- Recreational and commercial fishery participants
- Non-governmental organizations
  - Fishing industry-based
  - Environmental and other citizen-based
- Academics and students

Legislative and other requirements:

- MFCMA
- MMPA
- ESA
- NEPA
- RFA
- EO's 12866, 12898 and 13771

Socio-cultural and economic considerations are embedded in the fabric of the MSA

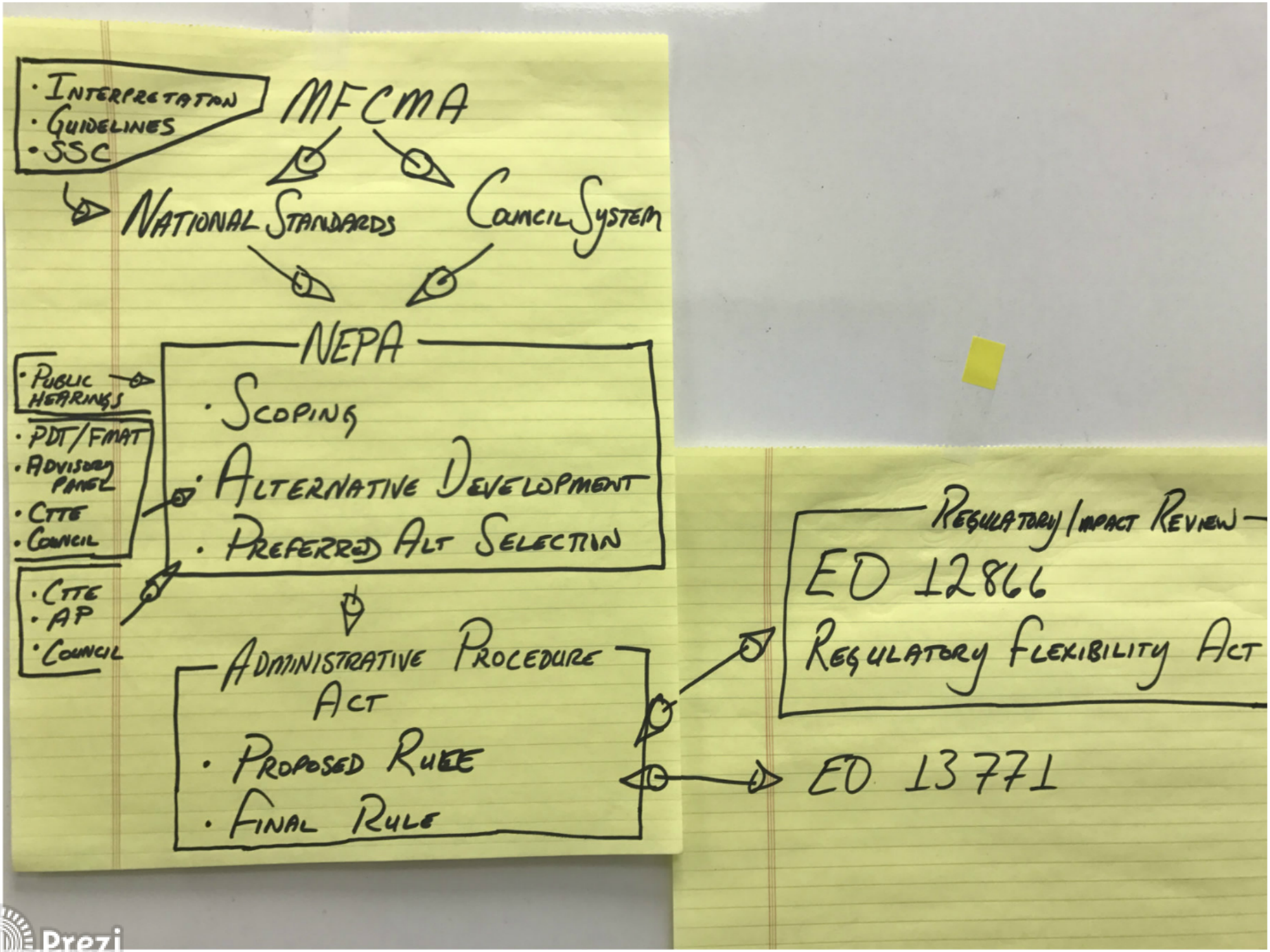
*"Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the **optimum yield** from each fishery **for the United States fishing industry**." [MSA, NS 1]*

*"If it becomes necessary to allocate or assign fishing privileges among various United States fishermen, such allocation shall be (A) **fair and equitable** to all such fishermen; (B) reasonably calculated to promote conservation; and (C) carried out in such manner that **no particular individual, corporation, or other entity acquires an excessive share** of such privileges." [MSA, NS 4]*

*"Conservation and management measures shall, where practicable, **consider efficiency in the utilization of fishery resources**; except that no such measure shall have economic allocation as its sole purpose." [MSA, NS 5]*

*"Conservation and management measures shall, where practicable, **minimize costs** and avoid unnecessary duplication." [MSA, NS 7]*

*"Conservation and management measures shall...**take into account the importance of fishery resources to fishing communities** by utilizing economic and social data ...in order to (A) provide for the **sustained participation** of such communities, and (B) to the extent practicable, **minimize adverse economic impacts** on such communities." [MSA, NS 8]*


· Interpretation
· Guidelines
· SSC
MFCMA
National Standards
Council System
NEPA
· Public Hearings
· PDT/FMAT
· Advisory Panel
· CTTE
· Council
· Scoping
· Alternative Development
· Preferred Alt Selection
· CTTE
· AP
· Council
Administrative Procedure Act
· Proposed Rule
· Final Rule
Regulatory/Impact Review
EO 12866
Regulatory Flexibility Act
EO 13771

TIMELINE FOR DEVELOPMENT OF AMENDMENT 18 TO THE GROUNDFISH PLAN

Spring 2013	*-Scoping*
Summer 2013	*-Let contract for excessive share analysis*
	-Develop TORs for contract
Fall 2013-Spring 2014	*-Develop analysis*
Summer 2014	*-Peer review of analysis*
	-Present peer review results to Council
Fall 2014-Spring 2015	*-Analysis to support Alt development*
Spring 2015	*-Select Final Alternatives*
Summer 2015	*-Analyze Alternatives*
Fall 2015	*-Select Preferred Alternatives*
Spring 2016	*-RFA and EO 12866 analyses*
Summer-fall 2016	*-Develop proposed/final rules*
Spring 2017	*-Publish final rule*

Not all FMPs are created equal

NEFMC Groundfish:

- FMP developed in 1986
- 18 Plan Amendments
- Just wrapped up 56th Framework Adjustment

Average of 2.6 actions per year

MAFMC Surf Clam and Ocean Quahog:

- FMP developed in 1977
- 18 Plan Amendments
- 1 Framework Adjustment

Average of one action every two years

By the nature of the plans and their complexities, management advice responsibilities can not be distributed uniformly, creating heterogeneity in FTE time allocated to management advice provision

Currently we staff 14 of 19 active PDTs and FMATs

FMP	Action Plan Type	Council	SSB FTE
Summer flounder, black sea bass, scup	FMAT	MAFMC	Scott Steinback, Chad Demarest
Squid, mackerel, butterfish	FMAT	MAFMC	John Walden
Bluefish	FMAT	MAFMC	
Tilefish	FMAT	MAFMC	Barbara Rountree
Surf clam/ocean quahog	FMAT	MAFMC	John Walden
Dogfish	FMAT	Joint MA/NEFMC	Scott Steinback
Habitat	FMAT	MAFMC	
Ecosystems	FMAT	MAFMC	Geret DePiper
Northeast multispecies	PDT	NEFMC	Chad Demarest
Atlantic sea scallop	PDT	Joint MA/NEFMC	
Monkfish	PDT	Joint MA/NEFMC	Trish Clay, Tammy Murphy
Habitat	PDT	NEFMC	Geret DePiper
Whiting	PDT	NEFMC	
Atlantic herring	PDT	NEFMC	Min-Yang Lee
Vessel baseline	Other	GARFO	Barbara Rountree
Skates	PDT	NEFMC	
Red crab	PDT	NEFMC	Barbara Rountree
Lobster	Other	GARFO	Barbara Rountree
Ecosystems	PDT	NEFMC	Geret DePiper

In an average year we:

- participate in 20+ management action development team, plan committee, and/or advisory panel meetings
- produce 8-10 NEPA social and economic impact analyses
- produce or assist in the development of 8-10 E.O 12866 and RFA analyses
- issue clearance letters, via the Regional Economist, for 14 Regulatory Impact Reviews
- allocate 4,992 hours of FTE labor time to providing analysis and management advice, over one quarter of our total FTE labor time budget

We are unique within the Agency in that we combine both Research and Management Advice social science functions under one roof

All other Regions have separate social sciences staffs at Centers and RO's

FMC	Councils Supported	Economics	Human Dimension	Total FTEs	FTE hours, management	FTE hours, science
Greater Atlantic Regional Office	NEFMC, MAFMC	0	0	0		
Northeast Fisheries Science Center	NEFMC, MAFMC	8	3	11	4,992	14,310
Southeast Regional Office	GMFMC, SEFMC, CFMC	5	2	7	10,920	2,912
Southeast Fishery Science Center	GMFMC, SEFMC, CFMC	6	2	8		13,312
West Coast Regional Office	PFMC	5	1	6	9,360	2,496
Southwest Science Center	PFMC	6	0	6		9,984
Northwest Science Center	PFMC	7	1	8		13,312
Alaska Regional Office	AFMC	3	0	3	4,680	1,248
Alaska Fisheries Science Center	AFMC	6	0	6		9,984
Pacific Islands Regional Office	WPFMC	1	0	1	1,560	416
Pacific Islands Science Center	WPFMC	2	1	3		4,992

Region	# supported FMPs	Regional FTE, total	Regional Management FTE Equivalent	#Supported FMPs per FTE
GARFO	15	11	2.4	6.3
SERO	17	15	5.3	3.2
WCRO	4	20	4.5	0.9
ARO	5	9	2.3	2.2
PIRO	5	4	0.8	6.7

This is good, and bad

Tools and models used in the provision of management advice

- I/O models
  - second-order employment and welfare impacts
- Demand models
  - price changes with respect to quantity
- Non-market valuation techniques
  - impacts on recreational fisheries
  - impacts from regulations mandated by ESA and MMPA
- Combined qualitative/quantitative techniques
  - community resilience, social impacts analysis
- Monte Carlo and constrained optimization
  - impacts of quota changes in catch share fisheries
- Decision choice modeling
  - changes in spatial distribution of fishing
- Producer welfare
  - aggregate changes
  - differential impacts across dimensions (vessel sizes, ports, gear types)
- NPV
  - costs and benefits vary over time
- Industrial organization and models of industry concentration
  - excessive shares determination

Community Social Vulnerability Indicators (CSVIs) and Mapping Tool Website

Community level indices that quantitatively measure aspects of fishing community vulnerability and resilience:

- Importance of commercial and recreational fishing
- Social vulnerability
- Gentrification pressure vulnerability
- Climate change vulnerability

Applications

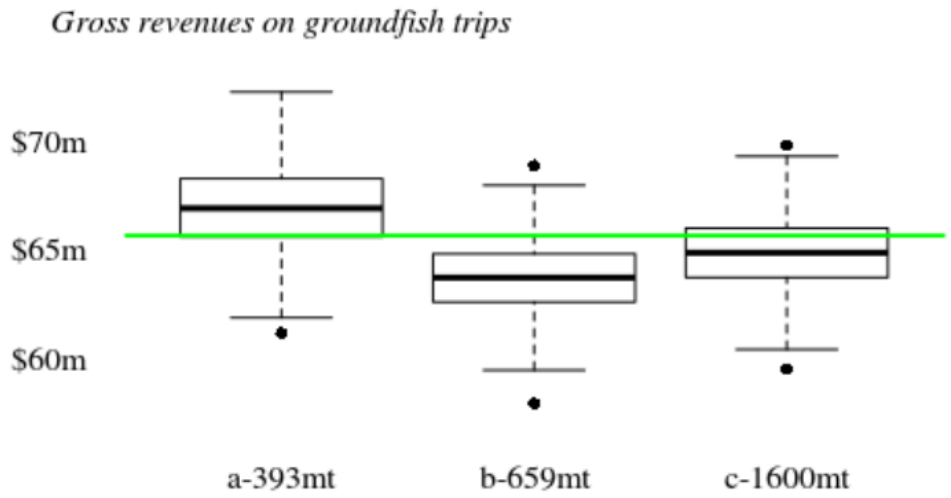
- Groundfish and monkfish SIAs
- State of the Ecosystem reports for MA and NE FMCs
- Climate change vulnerability assessments
- Human dimensions of US catch share programs report (in press)

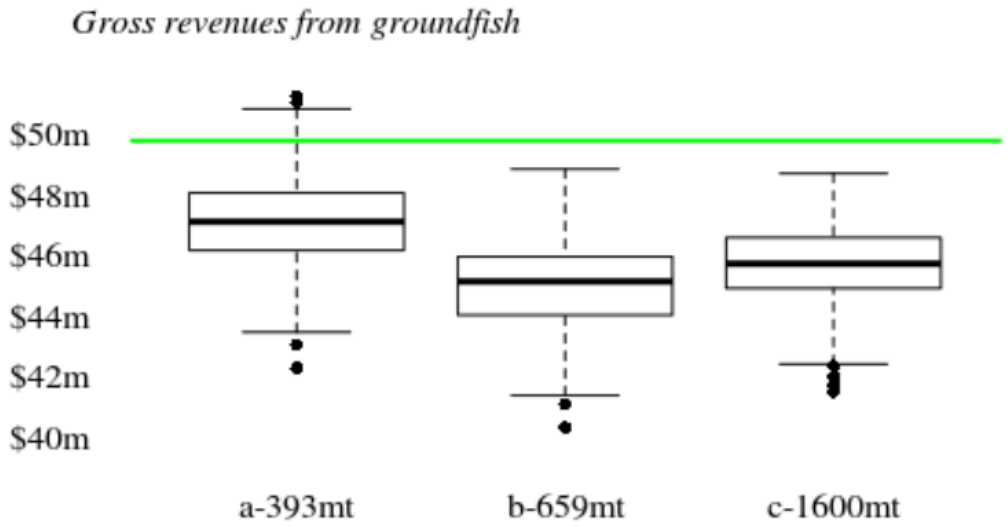
http://www.st.nmfs.noaa.gov/humandimensions/social-indicators/map

Quota Change Model: distributional impacts

	FY14 Baseline			FW 53 ACLs			FW 53 ACLs + Closure A			FW 53 ACLs + Closure B			FW 53 ACLs + Zero Retention GOM cod			FW 53 ACLs + ZR GOM cod + Closure A			FW 53 ACLs + ZR GOM cod + Closure B		
	Rev	p5 rev	p95 rev	Rev	p5 rev	p95 rev	Rev	p5 rev	p95 rev	Rev	p5 rev	p95 rev	Rev	p5 rev	p95 rev	Rev	p5 rev	p95 rev	Rev	p5 rev	p95 rev
Connecticut	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Massachusetts	43.8	39.7	48.2	40	35	45.3	41.2	36.5	46.1	41	36.1	45.9	39.6	34.8	44.6	40.6	36	45.4	40.7	36	45.5
Boston	*12.9*	*11.8*	*14.1*	*12.1*	*10.4*	*13.8*	*12.9*	*11.3*	*14.7*	*12.8*	*11*	*14.7*	*12*	*10.3*	*13.7*	*12.8*	*11.1*	*14.6*	*12.8*	*11.2*	*14.5*
Gloucester	*10.3*	*9.4*	*11.4*	*7.5*	*6.5*	*8.4*	*8.2*	*7.2*	*9.3*	*8.1*	*7.1*	*9.1*	*7.3*	*6.4*	*8.3*	*7.9*	*6.9*	*8.8*	*7.9*	*6.8*	*8.9*
New Bedford	*15.4*	*14*	*16.8*	*16.4*	*14.9*	*18.1*	*16.9*	*15.5*	*18.2*	*16.8*	*15.4*	*18.1*	*16.3*	*14.9*	*17.8*	*16.8*	*15.5*	*18.2*	*16.8*	*15.4*	*18.2*
Maine	14.8	13.2	16.4	12.4	10.7	14.1	12.9	11	14.7	12.4	10.9	14.2	12	10.4	13.7	12.6	11	14.5	12.4	10.7	14.2
Portland	*12.3*	*11*	*13.7*	*10.7*	*9.1*	*12.1*	*11.4*	*9.8*	*13*	*11.1*	*9.7*	*12.6*	*10.4*	*9*	*11.9*	*11.3*	*9.8*	*12.9*	*11.1*	*9.7*	*12.7*
New Hampshire	2.4	2.1	2.7	1.4	1.2	1.6	1.3	1.1	1.5	1.3	1.1	1.5	1.3	1.1	1.5	1.2	1	1.4	1.2	1	1.4
New Jersey	0.3	0.2	0.3	0.2	0.1	0.3	0.2	0.1	0.3	0.2	0.2	0.3	0.2	0.1	0.3	0.2	0.2	0.3	0.2	0.1	0.3
New York	0.9	0.7	1.2	1.2	0.9	1.6	1	0.7	1.3	1	0.7	1.3	1.2	0.9	1.6	1	0.7	1.2	1	0.7	1.3
Rhode Island	2.1	1.8	2.5	2.7	2.3	3.2	2.6	2.1	3	2.6	2.1	3.1	2.7	2.3	3.2	2.5	2.1	3	2.5	2.1	3
Point Judith	*1.6*	*1.4*	*1.8*	*2.1*	*1.8*	*2.4*	*1.9*	*1.7*	*2.2*	*1.9*	*1.7*	*2.2*	*2.1*	*1.8*	*2.3*	*1.9*	*1.7*	*2.2*	*1.9*	*1.7*	*2.2*
Other Northeast	0.1	0	0.1	0	0	0	.	.	.	0	0	0	0	0	0	0	0	0	0	0	0

Quota Change Model: aggregate impacts





You're skeptical. It's OK. I expected it.

Regulatory Impact Review

Executive Order 12866

- Target audience is OIRA and CBO
- Benefit/Cost analysis
- All affected sectors/fishing businesses
- Medium-term time horizon (real dollars, discount rate)
- Question: is this an economically significant rule?
  - *>$100mil annual affect (+/-, 2016 dollars), or*
  - *significant economic impact on particular region or sector of the economy*

Regulatory Flexibility Act (RFA)

- Target audience is Small Business Administration
- Short term change in financial status
- Limited to regulated entities (owners/businesses, not vessels)
- Question: will rule have a significant economic impact on a substantial number of small entities?
  - *Small business size standard for 2016 = <$11mil, applies to all fishing businesses*

Emerging issues and challenges

- New MRIP data means recreational and commercial allocations may be on the table for many FMPs simultaneously
- Five year reviews of LAPP programs required, newly published guidance include substantial analytical burdens
- Executive Order 13771 requires assessing costs and benefits of all regulatory actions, significant or not, including ESA and MMPA actions
- New NOAA policy on interpreting non-profit organizations that own quota, allocations or fishing businesses for the RFA takes us into novel territory

The social scientist as plumber

"...an economist who cares about the details of policy implementation will need to pay attention to many details and complications, some of which may appear to be far below their pay grade or far beyond their competence level. It will sometimes appear that the extensive training they received is underused if...the theoretical complexities turn out to be second order. On the other hand, they will have a chance to apply their economist's mind, since ***many of the details have implications for issues that are an economist's bread and butter: incentives, information, imperfect rationality, etc.****"*

E. Duflo, Ely Lecture, 2017 AEA

Fishery management issues are a social scientist's bread and butter

- common property resource management
- market vs. command regulations
  - technology vs. performance standards
- B/CA and the importance of costs
- value of goods traded in markets
- non-market valuation
- value and cost of obtaining information
- market failures
  - non-competitive markets
  - asymmetric information
  - externalities
- principal-agent problems

...and on and on.

Our services are underprovided

Topics for discussion

- NE is the only Region with integrated management/regulatory (SF) and science (ST) requirements...what are the benefits? Costs?
- Regional Economist performs clearances on behalf of Regional Administrator (GARFO), not Science and Research Director (NEC)...is this relationship acceptable/sustainable?
- Property rights with respect to analyses are not well established and variable across management units:
  - MAFMC frequently drafts entire analytical sections for documents, including RIRs;
  - NEFMC drafts entire sections and RIRs for some fisheries (e.g. scallops) but not others (e.g. everything else);
  - GARFO staff sometimes leans on SSB, and sometimes generates analyses independently despite having no professional economists on staff;
  - Virtually no support provided to ASMFC.
- Staffing: SSB has lost four FTE's since last program review, three in the last year, and this leaves significant deficits...will we be able to meet current and future mandates?
- Does SSB provide high-quality advice to GARFO, the MA and NE FMC's? Are there gaps? Where could we do better? Strategies for improved integration?